Quality Systems Manual
Materials Division

Section 2 -- Employee Management

Operational Position Descriptions

Asphalt Lab
Asphalt Binder Specialist Engineer

General Description

< Leads a group of Materials Test Technicians and performs advanced technical work. involving the State-wide testing of Asphalt Binders, sealants, Portland Cements, and other petroleum products.
< Directs the flow of testing and subsequent data retention and reporting.
< Writes materials specification and devises new tests and testing apparatus.

Supervision Exercised/Received

Works with considerable independence. Procedures are reviewed by supervisor for desired results and conformance to established policies. Supervises technical personnel.

Duties

< Oversees the chemical and physical testing of asphalt binders, cut-backs and emulsions, chemical testing of Portland Cement and other materials. Ensures compliance with the quality system for these areas of testing.
< Devises and applies formulas for the interpretation and calculation of test results and makes recommendations regarding compliance.
< Advises other engineers in the preparation of material specifications for asphalts and petroleum products.
< Assigns work and outlines procedures to be used by technicians in the group.
< Performs related work as required.

Minimum Qualifications:

< B.S. in Civil Engineering with a minimum of 4 years of directly related experience in highway materials.
< Must be a registered Professional Engineer in accordance with Utah Code 58-22, as annotated.

Asphalt Lab
Materials Engineering Assistant

General Description
Performs complex and diverse duties in a permanent laboratory setting which tests materials used in construction and maintenance of transportation systems.

Supervision Exercised/Received
Works under very little supervision. May supervise other technicians.

Duties

- Performs or directs specialized testing of asphalts and other materials to comply with specifications and for research data. Operates specialized equipment.
- Logs samples and retains data.
- Performs calculations necessary to provide results of tests; maintains records of test results.
- Performs other related duties as assigned.

Minimum Qualifications
- High school diploma or equivalent.
- Five years experience related to the tasks above.
- Successful completion of NICET certification test for a level IV in materials.

Asphalt Lab
Materials Test Technician

General Description
Sampling and testing of asphalt materials for construction and maintenance of transportation systems in permanent laboratory settings.

Supervision
Relatively close supervision. Supervisor checks and verifies newly assigned activities performed.

Duties
- < Performs simple tests to materials to analyze the physical and chemical properties and verify compliance to standards.
- < Performs calculations required by testing procedures.
- < Maintains reports, records, and files as required.
- < Performs other related duties as assigned.

Minimum Qualifications
- < Knowledge of plans and specifications; basic methods of highway construction and inspection; basic mathematics; safety procedures.
- < High school diploma or equivalent, plus one year experience in work related to the above tasks, or an equivalent combination of education and experience.
- < NICET certification level III in Materials.

Bituminous Lab
Field Operations Engineer Manager

General Description
Evaluates, coordinates and recommends bituminous mixtures, and testing and construction equipment for various state and federal highway projects. Writes specifications for Bituminous mixtures.

< Supervises the Central UDOT Bituminous and MTS Research Laboratories including the laboratory testing, personnel, equipment and supplies.
< Researches particular projects and certifies the district laboratories for bituminous mixtures.
< Provides technical assistance and training in solving problems for the region/district laboratories and field crews.
< Writes material specifications, and devises new tests and testing apparatus.

Supervision Exercised/Received
Considerable independence with weekly review at staff meetings. Supervises technical personnel.

Duties
< Oversees the bituminous laboratory. Ensures compliance with the Quality System Manual for these areas of testing.
< Assigns work and outlines procedures to be used by technicians in the group.
< Advises other engineers in the preparation/construction of asphalt concrete materials.
< Performs related work as required.

Minimum Qualifications
< B.S. in Civil Engineering with a minimum of 4 years of directly related experience in highway materials.
< Must be a registered Professional Engineer in accordance with Utah Code 58-22, as annotated.

Bituminous Lab
Materials Engineer Assistant

General Description

< Assists the Engineering staff in supervising technicians in testing of materials used in the construction and maintenance of Transportation Systems.
< Administers complex tests in a permanent Laboratory setting.

Duties

< Establishes laboratory testing schedules and work priorities. Coordinates a program of testing and/or research to assure effective performance of materials and conformity to standards and specifications, assures maintenance of equipment, checks calculations, supervises sampling procedures.
< Coordinates the activities of various units to assure accurate and complete performance of complex testing and research projects; maintains project records and reports including costs and manpower.
< Supervises and participates in shop and field testing, inspection and reporting of bituminous mixtures, testing, and other items.
< Trains assigned personnel in standards and complex testing procedures; trains personnel outside of state government.
< Supervises staff personnel in performing assigned duties.
< Performs other related duties as assigned.

Minimum Qualifications

< Must have worked for the department for a minimum of 15 years in materials testing or related areas.
< Must have passed one NICET IV exam in separate areas.

Cement Laboratory
Cement Laboratory Technician

General Description
Operates the cement lab and maintains testing equipment. Assigns the order of testing on various samples of cement and fly ash.

Supervision
Considerable independence with review of procedures as new testing is required.

Duties
< Maintain a constant record of sample tests and the test results.
< Calculate quantities for sample preparation.
< Maintain current records, correct deficiencies in equipment, and run CCRL samples within specified time limits for accreditation.
< Conduct related duties as required.

Minimum requirements
< Four months testing experience under a qualified technician.
< NICET test qualification in materials and/or UDOT Transportation Technician Training (T^3).
< High school diploma or GED certificate.

Certification Laboratory

Calibration Certification Manager
Materials Test Technician IV

General Description

Performs complex and diverse duties in a permanent laboratory setting which tests materials used in construction and maintenance of transportation systems.

Supervision Exercised/Received

Works under very little supervision. May supervise other technicians.

Duties

- < Performs or directs specialized testing of asphalts and other materials to comply with specifications and for research data. Operates specialized equipment.
- < Calibrates and repairs materials testing equipment and Port of Entry scales.
- < Logs samples and retains data.
- < Performs calculations necessary to provide results of tests; maintains records of test results.
- < Procures and/or surpluses equipment as necessary.
- < Schedules and performs certification of laboratories and equipment.
- < Performs other related duties as assigned.

Minimum Qualifications

- < High school diploma or equivalent.
- < Five years experience related to the tasks above.
- < Successful completion of NICET certification test for a level IV in materials.

Certification Lab

Laboratory Certification Specialist II
Materials Test Technician III

General Description

The Laboratory Certification Specialist

< Operates and manages nuclear garage section, calibration and repair section and port-of-entry scale section.
< Supervises the repair and maintenance of a variety of laboratory equipment including. compression, compaction, ovens thermometers, etc. Reviews and logs all calibrations performed.
< Collects and stores data.

Supervision Given and Received

Works with little input from the Pavement Manager, a licensed professional engineer. Supervises other employees.

Duties

< Oversees state-wide laboratory certification as well as appropriate calibration procedures on test equipment adhering to AMRL specification and frequency.
< Oversees budgetary compliance related to repairs, maintenance and calibration of laboratory test equipment.
< Schedules routine and emergency repairs and service to related equipment.
< Manages calibration and certification of nuclear gauges and gauge operators.

Minimum Qualifications

< Four years experience in a related field or laboratory equipment repair.
< Six years experience in a supervisory position, or a year-for-year trade for University study in Engineering of related field.

Certification Lab
Materials Testing Technician III

General Description
Tests and samples material used in transportation systems construction and maintenance. Works in a laboratory and in the field.

Supervision
Very little supervision. May supervise other employees.

Duties
< Conduct or direct specialized physical testing of materials analyzing their physical properties to verify compliance with standard specifications. Among materials tested are:
  reinforcing steel
  concrete
  structural steel bolts, nuts, DTE's and flat washers
  geotextiles
  fencing
  pipe (PVC, CMP, cast iron, polyethylene)
  Other related products
< Calculate test results and maintain test results records.
< Interpret plans and specifications for materials requirements.
< Conduct or direct field sampling of materials required for testing.

Minimum Qualifications
< High School diploma or equivalent.
< Five years experience in related work, or year-for-year substitution in college or technical study.
< Successful completion of NICET Level III examination in materials.
< (Optional) Successful completion of ACI Level I examination.

Certification Lab/Nuclear Gauge Lab

Laboratory Calibration Technician (Nuclear Gauge)

General Description

Repairs and calibrates a variety of laboratory equipment, including compression, compaction, thermometers, ovens, etc.

Supervision

Very little direct supervision. May be required to supervise support personnel.

Duties

< Calibrates and repairs a wide variety of laboratory equipment.
< Operates specialized technical equipment and has a working knowledge of mechanical, electrical, electronic, hydraulic and associated repair.

Minimum Qualifications

< High School diploma or equivalent.
< Three years experience in a related field, or substitution on a year-for-year basis for education or experience.
< Four years experience in calibration and repair of nuclear gauges.
< Must be RPO trained and certified.

Certification Lab
Materials Test Technician

General Description and Duties

< Certifies sieves used statewide in the Central Materials labs, in region labs and field labs for material gradation, and checks thermometers for separations in mercury. Uses the Ram Optical Instrumentation scanning equipment.
< Purchases replacement sieves as needed.
< Demonstrates the use of the Ram equipment to various personnel including those scheduled for training.
< Prepares paperwork for cleaning, repairing, and calibrating of air meters.
< Surpluses non-repairable and/or obsolete materials testing equipment.
< Maintains reports, records and files as required.
< Receives and inspects new capital equipment ordered through any of the Materials Division's arms (labs, etc.).
< Coordinates equipment inventory with Project Development Support Services.
< Assists with purchasing or tracking the purchase of various pieces of equipment requested through or for the Certification Lab.

Supervision Required

Minimum supervision.

Minimum Qualifications

< Knowledge of basic mathematics, sieve cleaning skills, computer literacy for word processing, spreadsheet presentations.
< High school education, plus 1 or 2 years of experience developing skills to address the tasks indicated above.

Chemistry Lab
Chemist

General Description

< Advanced technical work involving the State-wide chemical testing of Portland Cements, fly ash, zinc, epoxy paint, lime, soil, aggregate, and water.
< Conducts IR and GC testing on paint and paint related products, asphalt emulsions, concrete additives, concrete sealers and curing compounds, and other miscellaneous materials.

Supervision

Works with considerable independence. Supervised by the Quality Assurance Manager.

Duties

< Perform the instrumental or wet chemical analysis of materials submitted to the lab.
< Maintain a constant record of samples tested and the test results.
< Satisfy accreditation requirements:
  < Keep all testing records current
  < Correct any deficiency in equipment
  < Test CCRL samples within the time specified

Minimum Qualifications

Bachelors Degree in Chemistry.
Four years experience in wet chemical and instrumental analysis of highway materials.

Geotechnical Division
Chief Geotechnical Engineer

Description of Duties
Manages the Geotechnical Division budget, distributes work load, and supervises the Geotechnical staff in the following areas:

< **Field Investigation**
Supervises the Field Investigation unit. Ensures that they have adequate training and equipment to conduct competent field investigations.

< **Geotech Lab Testing**
Supervises the Geotech Laboratory and the Aggregate Laboratory Testing Programs. Ensures that they have adequate training, facilities and equipment to conduct the needed testing. Emphasizes the need to maintain standards required for Laboratory certification.

< **Geotech Design**
Supervises the Geotech Design Staff in the following areas; Concept, Scoping, PS&E, and Final Design and development of plans and specifications for Pile, Pier Capacity & Settlement, Stress Analysis for vertical, lateral, and seismic loading, Shallow foundation design, Retaining wall stability, construction analysis, embankment settlement, slope stability, landslide mitigation, and rockfall mitigation.

Supervision
Works with considerable independence. Supervises division personnel.

Minimum Qualifications
< B.S. in Civil Engineering with a minimum of 4 years of directly related experience in highway materials.
< Must be a registered Professional Engineer in accordance with Utah Code 58-22, as annotated.

Geotechnical Division
Geotechnical Testing Engineer

General Description
- < Leads technicians in advanced technical testing of soils and aggregates.
- < Assigns tasks and outlines procedures, especially where new materials or tests are used.
- < Writes materials specifications; devises new tests and testing apparatus.

Supervision
Considerable independence. Consults with the Geotechnical Division Chief and engineers on policy changes. Supervises Soils and Aggregate Technicians.

Duties
- < Oversees the chemical and/or physical testing of soils and aggregates.
- < Ensures compliance with the quality system for testing for soils and aggregates.
- < Devises and applies formulas for the interpretation and calculation of test results, and makes recommendations regarding compliance.
- < Advises other engineers in the preparation of material specifications for soils and aggregates.
- < Assigns work and outlines procedures.
- < Performs related work as required.

Minimum Qualifications

Education: B.S.C.E Geotechnical Engineering.

Licensure: Professional Engineer, State of Utah.

Experience: Five years technical experience in areas of design, engineering surveys, materials testing, transportation and highway planning, traffic construction, and/or highway maintenance.

Geotechnical Division
Materials Test Technician II

General Description
Performs a variety of moderately complex duties in a permanent laboratory setting where maintenance and construction materials used in transportation systems are tested.

Supervision
General supervision with few checks and verification of assigned duties.

Duties
- Performs specialized tests of materials to analyze the physical and chemical properties to verify compliance with standards.
- Operates various types of specialized equipment and uses specialized chemicals in the performance of tests.
- Samples materials as necessary.
- Performs calculations required to provide test results, and maintains test result records.
- Performs other related duties as assigned.

Minimum Qualifications
Education: High School diploma or equivalent.
Experience: Three years of experience in work related to the above tasks, or substitute college or technical study for the required employment on a year-for-year basis.
Registrations: Must have passed the NICET Level II examination in materials.

Geotechnical Division
Materials Test Technician III

General Description
Performs complex and diverse duties in a permanent laboratory setting where construction and maintenance materials used in transportation systems are tested.

Supervision
Requires very little supervision and may supervise other employees.

Duties
- Performs or directs specialized testing of materials to analyze the physical and chemical properties to verify compliance with standards. Supervises or operates various types of specialized equipment and uses specialized chemicals in the performance of tests.
- Supervises the sampling of materials.
- Performs calculations for test results, and maintains records of results.
- Directs or supervises other technicians.
- Communicates effectively orally and in writing.
- Performs other related duties as assigned.

Minimum Qualifications
Education: High School diploma or equivalent.
Experience: Five years experience in work related to the above tasks, or substitute college or technical study for the required employment on a year-for -year basis.
Registrations: Must have passed the NICET Level III examination in materials.

Material Assurance Section
Materials Engineering Manager

General Description

Improves the performance of the Materials Division through administrative and lab functions

- < Manage the complex and diverse quality system programs for materials assurance involving AASHTO, ASTM, AMRL, CCRL, Contractors, Consultants, FHWA, and other Department of State/Divisions with UDOT.
- < Supervise a large and highly specialized staff involved in numerous activities such as statewide management of UDOT and Contractor/Consultant testing equipment, technical training and certification for materials acceptance and assurance of project material, administration of nuclear testing services, and publication of materials manuals and quality programs.
- < Organize meetings and committees to review and discuss changes to current testing practices, existing quality programs, sampling and testing requirements, statistical acceptability standards, methods of certification, technical training practices, and materials assurance guidelines.
- < Establish policies regarding Contractors/Consultants quality control and acceptance testing, project laboratory verification testing, region laboratory split-sample testing, Central Materials proficiency sample program and referee testing, and requirements subcontracting consultant services.

Duties

- < Communicate with staff to align activities with stated objectives of the Materials Assurance Section and review each individual's annual personal performance strategies.
- < Coordinate the development and distribution of assignments for laboratory equipment certification team members.
- < Conduct meetings with Materials and Construction Division engineers and managers on Materials Assurance.
- < Recommend modifications to manuals of instruction and coordinate organization of committees for reviews.
- < Review modifications to laboratory quality system manuals of instruction and determine feasibility of program changes.
- < Evaluate response of equipment certification team activities to the needs of state and private testing laboratories.
- < Monitor statistical and practical integrity of state and private test results for falsification of data.

Minimum Qualifications

- < B.S. in Civil Engineering.
- < Licensed with two years related experience.

Quality Assurance Section
Materials Engineer Assistant

General Description
Performs complex and diverse duties where transportation systems construction and maintenance materials are used.

Supervision
Works under very little supervision. May supervise other technicians.

Duties
- < Coordinates testing and/or research to assure effective performance of materials and conformity to standards and specifications; assures maintenance of equipment, verifies calculations, and supervises sampling procedures.
- < Coordinates the activities of various units to assure accurate and complete performance of complex testing and research projects; maintains project records and reports including costs and manpower.
- < May supervise and participate in shop and field testing, inspection and reporting of structural steel fabrication, concrete and steel beams, and other items.
- < Trains assigned personnel in standards and complex testing procedures; provides training for personnel outside of state government.
- < May supervise a staff of subordinate personnel in performing assignments.
- < Performs other related duties as assigned.

Minimum Qualifications
- < High school diploma or equivalent.
- < Five years experience related to the tasks above.
- < Must have passed the NICET certification test for a Level 4 in Materials.

Quality Assurance Section
Materials Test Technician III

General Description
Performs complex and diverse duties in a permanent laboratory setting where materials used in transportation system construction and maintenance, and/or sampling and inspection used in the field are tested.

Supervision
Very little supervision. May supervise other employees.

Duties
- < Tests or directs specialized materials testing to analyze physical and chemical properties to verify compliance with standards. Supervises materials sampling, and operates specialized equipment.
- < Inspects or directs inspections of fabricator shops in the manufacture of concrete and steel beams and other fabricated items to verify compliance with standards.
- < Inspects or supervises the inspection of concrete and asphalt batch plants to assure compliance with standards.
- < Calculates test results, and maintains test result records.
- < Designs asphalt and concrete mixtures in accordance with plans and specifications.
- < Interprets plans and specifications for requirements of specific contracts.
- < Performs other related duties as assigned.

Minimum Qualifications
Education: High School diploma or equivalent.
Experience: Five years experience in work related to the above tasks, or substitute college or technical study for the required employment on a year-for-year basis.
Registrations: Must have passed the NICET Level III examination in materials.

Quality Assurance Section
Materials Test Technician II

General Description
Perform moderately complex duties in a setting where maintenance and construction materials, and/or sampling and inspection materials are used in the field or laboratory tested.

Supervision
General supervision with few checks and verification of assigned duties.

Duties
- Performs specialized test of materials to analyze the physical and chemical properties to verify compliance with standards; operates various types of specialized equipment and uses specialized chemicals in the performance of test.
- May sample materials as necessary.
- Calculates test results, and maintains test result records.
- May design asphalt and concrete mixtures to conform with plans and specifications
- Inspect concrete and asphalt batch plants to assure compliance with standards and requirements.
- Interprets plans and specifications for requirements of specific contracts.
- Performs other related duties as assigned.

Minimum Qualifications
Education: High School diploma or equivalent.
Experience: Three years of experience in work related to the above tasks, or substitute college or technical study for the required employment on a year-for-year basis .
Registrations: Must have passed the NICET Level II examination in materials.

Paint Lab
Materials Test Technician Level III

General Description
Advanced technical work involving the State-wide testing of all pavement marking materials including

Pavement Marking Tape
Solvent based traffic paint
Two-apart epoxy
Water based traffic paint
Guard rail paint
Glass spheres used in pavement marking material (conduct gradations)

Supervision
Works with considerable independence. Subject to review of procedures by the supervisor to ensure desired results and conformance to the established specifications requirements.

Duties
< Testing materials to ensure compliance with specification in the field and the lab.
< Assist in determining recommendations regarding compliance.
< Assist in developing QA procedures on project acceptance and setting up test frequencies.
< Project accounting for traffic control statewide, and assigning contractor's work assignments.
< Handling and disposal of chemicals.
< Log and file test results and prepare various reports for and distribution to all project. engineers and consultants.
< Maintain and update project file correspondence and test samples.

Training
< Level III NICET (Materials).
< Four years related experience.
< Physical testing and field inspection as required for materials.
< Annual AMRL paint correlation.
< On-the-job training by senior technicians.

Biographical Sketches - List

Materials Division

Tim Biel, Engineer For Materials
Howard Anderson, Field Operations Engineer Manager
Troy Peterson, Engineer for Quality Assurance
William J. Lawrence, Concrete Materials Engineer

Materials Pavement Team

Cameron C. Petersen, Asphalt Binder Specialist Engineer
Murari Pradhan, Bituminous Mix Specialist Engineer
Roy Ulibarri, Materials Engineer Assistant
Michael R. Nash, Materials Test Technician
Steven E. Niederhauser, Materials Engineer Assistant
Clark Allen**,** Materials Test Technician

Lab Certification Team

Graham A. Starkie, Laboratory Certification Specialist
Ross W. Raleigh, Laboratory Certification Specialist
Charles A. Shafer, Laboratory Certification Specialist
Pam White, Laboratory Certification Specialist (Nuclear Gauge)
Gerald Carter, Laboratory Certification Specialist (Sieves)

Acceptance Team/Inspectors

Robert Winters, Materials Test Technician
Gary G. Sheppick, Material Engineer Assistant
Robert Davis, Materials Test Technician
Ron Markovich, Materials Test Technician
Sara J. Carlock, Chemist

Training Team

Bryan Lee, Quality Systems Engineer
John Niel, Lab Accreditation Engineer
Desna Bergold, Training Coordinator
Bill Redford, Training Coordinator

Geotechnical Division

Keith Brown, Chief Geotechnical Engineer
Darin L. Sjoblom, Geotechnical/Testing Engineer

Timothy D. Biel, P.E.
Engineer for Materials

Education

MSCE, University of Utah
BSCE, University of Illinois

Experience

Pavement evaluation, design and management. Design and control of Portland Cement Concrete and Hot Mix Asphalt materials. Technical specification writing and review. Surveying and layout of highway facilities. Project field supervision and coordination of field activities. Project site grading and drainage design. Employee management and performance review.

Work Experience

April 2002 to Present **Engineer for Materials**
Utah Department of Transportation

- < Manage UDOT Central Materials Division which includes the Quality Assurance Laboratory, Equipment Certification & Technician Training Unit and Pavement Operations Unit.
- < Supervise thirty person staff.
- < Manage budget and resources of the Materials Division

1994 to April 2002 **Materials Engineer for Region Two Materials Lab (SLC)**
Utah Department of Transportation

Technical responsibilities include evaluation and design of pavement structures, implementation of pavement management, review of consultant generated pavement designs, evaluation of existing roadway sections for rehabilitation, back-calculation of pavement layer modules from FWD testing, review of asphalt concrete and Portland cement concrete mix designs, review of design projects for materials conformance, creation and revision of materials specifications and provisions, field inspection fo material placement, review and evaluation of field materials problems, and research and implementation of new materials and concepts related to pavement design. Responsibility reaches portions of up to 25 different projects yearly.

Office responsibilities include management and coordination of materials quality assurance testing performed by the lab, update of lab activities in the Preconstruction Project Management System, update of testing and design historical records, performance review and evaluation for two full-time employees, management of Materials Lab, review and update the lab hazardous materials permit and organization of the lab Data Processing plan.

Knight Architects Engineers Planners, Inc., Chicago IL.

1993 to 1994	Survey and construction engineer for reconstruction of roadway and bridges on Interstate 90, Kennedy Expressway, Phase II, Chicago IL.
1991 to 1993	Resident Engineer for construction of Metropolitan Rail Commuter Rail and Welfare Facility, 179th Street, Orland Park, IL.
1990 to 1991	Surveyor/Construction Engineer for reconstruction of roadway and bridges on Illinois Route 43, Harlem Avenue, Chicago, IL.

Professional Licenses And Awards

State of Utah, Professional Engineer, #96-320546, 1996
Troxler Nuclear Corporation, Density Gauge Technician, 1990
University of Utah, department of Civil Engineering, Outstanding Transportation Student of the Year, 1994

Specific Skills and Achievements

- Familiarity with dRoad and dTims Pavement Mangement Systems
- Knowledge of AASHTO pavement design procedures
- Knowledge of UDOT's 08-1 and PPMS process
- Knowledge of FHWA's 86-1 process
- Knowledge of AASHTO and ASTM specifications related to Paving Materials
- Knowledge in SHRP volumetric design procedures for Hot Mix Asphalt
- Authorship of UDOT report UT-93.166, "*Field Performance study of Selected Portland Cement Concrete Pavement Joints sealants in Utah"*
- Research and Design of a fully drainable PCC pavement section for a local urban arterial including an open-graded permeable lean concrete base layer.

Howard James Anderson, P.E.
Engineer for Pavements

Education

Oct 1992 **Registered Professional Engineer** in Utah license number 93-189295-2202.

May 1989 **Master of Science in Civil Engineering**, University of Nevada-Reno, GPA 3.9
May 1987 **Bachelor of Science in Civil Engineering**, University of Nevada-Reno, GPA 3.3
Oct 1986 **Engineer in Training**, No. 1762, State of Nevada
Jan 1982 to April 1984 Attended BrighamYoung University, Enrolled in CE program

Engineering/Work Experience

- Utah Department of Transportation, 1/00 to present, Field Operations Engineer Manager. Duties and Responsibilities: Oversee the different specifications involved with pavements in the state. Manage the UDOT Central Paving Unit. This includes the Asphalt Lab Section, Bituminous Lab Section, and the Chemistry and Cement Lab. Also included is participation on various national and regional committees with AASHTO, RMAUPG, and ASTM.
- Utah Department of Transportation, 6/97 to 12/99, Engineering Data Base Manager. Duties and Responsibilities: as described in three categories.

  Pavement Management Analysis

  Develop a system level pavement management model to analyze the most current data available and produce reports for region level and system level use for STIP development. Perform engineering analysis using dTIMS for the Pavement Management System, for NHS, State, and other roadway networks. This requires the expertise in creating and loading the model, running the software, and analyzing the results and preparing reports. Work with Wasatch Front Regional Council and related task forces to improve their use and understanding of pavement management practices and applications. Aid in the development of pavement management models for these City and County officials.

  Pavement Management Training

  Conducts in-depth training for the Regional Pavement Management Engineers to assist them in understanding and properly using the pavement management analysis program. Troubleshoot user problems. Act as liaison between users and the software venders. Insure that the Deighton software for dTIMS and dROADS and or other pavement management software is properly installed and licensed for each of the Region Pavement Management Engineers. Conduct training for local MPO's and other local agencies on the use of dTIMS and dROADS. Act as the technical advisor on pavement management development and software for the local MPO's and other local agencies.

Data Base Management
Maintain and manage all aspects of UDOT's Engineering Database, using specialized software for the P.C. Works as the overall operations and engineering person for the database; maintains all aspects of engineering data and applications to include Highway Inventory, Accident Records, Pavement Conditions, Traffic Volumes and Highway Structures; develops, evaluates and implements short and long range plans for development of the engineering database. Manage the collection and loading of Construction History data on the state system. Create and distribute data sets for Statewide and Region coverage. Help to coordinate and monitor use of UDOT's location reference system.

5/89 to
5/97 **Bituminous Engineer, Utah Department of Transportation**

Job objective: evaluate, coordinate and recommend bituminous mixtures, testing procedures and construction equipment for state and federal highway projects.

- Write specifications for bituminous mixtures.
- Supervise the Central UDOT Bituminous Laboratory including the lab testing, personnel, equipment and supplies.
- Research asphalt mixtures.
- Provide technical assistance and training for district and field laboratories and construction crews, and assist in solving problems.

Other specific assignments and duties included:

- Develop and use test procedures including the Georgia Loaded Wheel Tester, gyratory compaction of laboratory samples, ignition furnace test for asphalt. content, Hamburg Rut tester, and various new procedures developed by SHIP.
- Conduct detailed mix designs for all recycle projects in the state. Supervise and train field personnel conducting the quality control testing for the project.
- Write and review UDOT test method procedures and specifications when applicable to bituminous mixtures. Examples include
  - 402 Gyratory specification and the 402 QC/QA specification for dense graded asphalt concrete
  - Supplemental specification for the optional use of recycled asphalt
  - Hydrated lime specification
  - Sections in the *Materials Manual* and the *Minimum Sampling and Testing Requirements Manual*
  - Section 400 rewrite to metric units
  - Smoothness special provision for asphalt concrete
  - Loaded wheel test procedure
  - Micro surfacing special provision
  - Large aggregate mix design procedure
  - Lottman test procedure
- Certify the six district labs for bituminous mixtures. Our central bituminous lab is certified by AMRL of the National Institute of Standards and Technology.
- Principal Investigator for use of new pavement materials including stone matrix asphalt, crumb rubber modified asphalt, and large aggregate mixtures.

3/93 to 1/95 **Bituminous/Certification Engineer, Utah Department of Transportation**

Responsibilities identical to those of Bituminous Engineer with added responsibilities for the certification unit.

- Repaired UDOT equipment, surveyed property, certified/calibrated all UDOT and consultant testing equipment used on any construction project.
- Calibrated, maintained and repaired all eight ports of entry scale systems.
- Conducted radiation licensing, and employee radiation training.
- Calibrated, maintained and repaired over 100 nuclear density and asphalt content gauges.
- Supervised 9 employees.

1/88 to 5/89 **Research Assistant, Civil Engineering Dept., University of Nevada-Reno**

- Researched asphalt cement and asphalt concrete with different modifiers, including Kraton, Polyolefin, Styrelf and AC-20R.
- Reduced the data, including use of computer programs and language such as Lotus, Chart, WordPerfect, Basic and Edlin. This research was sponsored by the Nevada Department of Transportation.

1/88 to 5/88 **Teaching Assistant for non metals lab, Civil Engineering Department University of Nevada-Reno**

- Conducted weekly labs for two class sections on the subjects of concrete, aggregate and bituminous materials. Shared responsibility with another teaching assistant.
- Prepared for lab work, wrote exams and handouts, and graded labs and tests.

5/87 to 12/87 **Research Project Manager, Civil Engineering Department, University of Nevada-Reno**

- Headed research project for the Nevada Department of Transportation on different aggregate fine contents with and without lime.
- Performed and coordinated testing program and supervised two technicians. Work included data reduction, utilizing computer programs and language, such as Lotus, Chart, WordPerfect, Basic and Edlin.

1/86 to 12/87 **NDOT Project Manager-Laboratory Technician, Civil Engineering Department, University of Nevada-Reno**

Monitored and reported daily work for Nevada Department of Transportation, including resilient modulus, tensile strength and moisture sensitivity testing. Tested more than 100 individual samples (multiple tests per sample) per month.

5/86 to 8/86 **Technician, Civil Engineering Department, University of Nevada-Reno**

8/86 Conducted ASTM and AASHTO tests on asphalt concrete, asphalt, aggregates and additives for the Nevada DOT and Dow Chemical Company.

5/85 to 8/85 **Engineering Student Aid III, Nevada Department of Transportation, Carson City, Nevada**
Worked in the Right of Way Engineering Department as an engineering student aid. Drafted in ink, calculated road layout, searched titles and surplus property, filed documents and made posters for court use.

5/84 to 5/84 **Construction Worker, 49th Street Galleria in Murray, Utah**
Operated bobcat tractor, backhoe, and forklift.

4/79 to 12/79 and 5/82 to 8/82 **Construction Worker, S & S Construction, Kent, Washington and Dallas, Texas**
Framed houses and apartment buildings, and worked on concrete foundations, driveways, sidewalks, wood structural frames, sheetrock and finish work.

Organizations

International Slurry Seal Association

Professional Papers

< "Results of the Georgia Rut Tester on Western States Mixes," Howard Anderson, Materials and Research Section, Utah Department of Transportation, February, 1993.

< "Polymer Effects on Asphalt Materials," Howard Anderson, Thesis for Master of Science Degree in Civil Engineering, November 1990, University of Nevada-Reno.

< "Influence of Lime on the Fines Content of Asphalt Concrete Mixtures," Mary Stroup-Gardiner, Howard Anderson, David Newcomb and Jon Epps; presented at the ASCE conference in Nashville, May 1988.

TROY L. PETERSON, P.E.
Quality Assurance Engineer

EDUCATION:
University of Utah, Salt Lake City, Utah
June 1994, BS - Civil Engineering

PROFESSIONAL REGISTRATION:
Professional Engineer, State of Utah License No. 282249

PROFESSIONAL AFFILIATIONS:
American Society of Civil Engineers – Member

EMPLOYMENT HISTORY:

7/01 – present **Utah Department of Transportation**
Materials
Quality Assurance Engineer

Manage many complex and diverse quality system programs for materials assurance involving AASHTO, ASTM, AMRL, CCRL, contractors, consultants, FHWA, and other Departments of State Divisions within UDOT. Administer UDOT Laboratory Qualification Program and WAQTC Technician Qualification Program.

Supervise a large and highly specialized staff involved in numerous activities including statewide management of UDOT and Contractor/Consultant testing equipment, technical training and certification for materials acceptance and assurance of project material, administration of nuclear testing services and publication of materials manuals and quality programs.

Review and implement changes to current testing practices, existing quality programs, sampling and testing requirements, statistical acceptability standards, methods of certification technical training practices, and materials assurance guidelines.

Establish policies regarding Contractors/Consultants quality control and acceptance testing, project laboratory verification testing, region laboratory split-sample test, central Materials proficiency sample program and referee testing, and requirements concerning subcontracting consulting services.

9/00 - 7/01 Utah Department of Transportation
Maintenance
Civil Engineer III

Methods Engineer. Oversee procurement for maintenance materials. Research and develop new ways of completing tasks in the maintenance division. Edit/review/develop specifications pertaining to maintenance materials.

8/94 - 9/00 HW Lochner, Inc.
Project Engineer

Project Engineer for the California Ave. Project. Responsible for leading design team in developing terrain models and basemaps, developing alternative horizontal and vertical alignments and checking for compliance with AASHTO standards, developing plans and details for construction, calculating quantities and preparing engineers' estimate. Additional duties for this project include developing project specifications.

Project Engineer for the Murray City North/South Corridor Project. Responsible for the design of horizontal and vertical alignments, engineers' estimates, traffic control plans and lighting circuits. Additional duties for this project include assisting in the development of project specifications.

Other projects and duties include construction management of the Jordan River Bike Path for the city of Salt Lake, a federally funded project. Duties include coordinating with clients and contractors on project status, schedules and budgets. Responsible for calculating monthly estimates, monitoring EEO and labor compliance, and overseeing Construction Management and Materials testing Staff.

Additional duties have included developing drainage areas from contour maps, performing hydrologic analysis of drainage areas, surveying cross sections at bridge sites, inspecting roadway reconstruction (concrete and asphalt) and concrete bridges from footings to bridge decks. Other responsibilities include supervising Lab Technicians and Survey Crews.

6/93 - 8/94 Utah Department of Transportation
Civil Engineer Intern

Inspected storm drain pipe placement and backfill operations, inspected asphalt/concrete pavement and bridge deck pours, tested concrete (air/slump), performed compaction testing, survey duties such as slope staking, setting horizontal and vertical control, right of way limits and other survey.

William J. Lawrence, P.E.
Concrete Materials Engineer

Education

1991 **Bachelor of Science, Civil Engineering**
Utah State University **Minor - Mathematics**

Professional Registrations

1996 **Professional Engineer: Utah**

Experience

January 1996 to Present **Materials Engineer**
Utah Department of Transportation, Salt Lake City, Utah

- Develop and coordinate statistically based quality assurance and quality control programs for each material specification.
- Oversee the QA testing and inspection of each materials specification. Ensure each material specification contains the appropriate composition and acceptance testing requirements.

1996 to 1992 **Urban Planning Engineer**
Utah Department of Transportation, Salt Lake City, Utah

- Compiled and analyzed data concerning the urbanized areas of Utah including, site impact analysis, traffic projections, congestion management, commuter studies and other engineering assistance.
- Served on UDOT's Intelligent Transportation Systems Committee.
- Provided a lead role with the Cache Metropolitan Planning Organization.

1992 to 1991 **Rotational Engineer**
Utah Department of Transportation, Salt Lake City, Utah
Provided assistance in different areas of the Department of Transportation and became familiar with the functions and operations of the several engineering divisions including Locations and Environmental Studies, Materials and Research, Safety, Pre-Construction, Planning, Structures, Construction and Maintenance.

Summers 1988 & 1989 **Engineer in Training**
Utah Department of Transportation, Riverside, Utah
Inspected construction work on I-15 from Tremonton to Plymouth including; overhead signs, signs, the Malad River Bridge and the concrete batch plant operations. Sampled and tested lean base, untreated base, concrete and bituminous materials.

Cameron C. Petersen, P.E.
Asphalt Laboratory Supervisor (Engineer)

Education

Highway Engineering Diploma
International Correspondence Schools, 3/68

Transportation Engineering Technology Certificate Program
Standard 4-year program completed 4/69
Advanced 2-year program completed 2/87
Utah Department of Transportation through the University of Utah and Brigham Young University

Fundamentals of Engineering College Program
Brigham Young University, 12/91

Professional Recognition

Registered Professional Engineer in the State of Utah
License Number 93-176047-2202

Experience

6/78 to Present — **Asphalt Laboratory Engineer, Central Materials Laboratory**
Utah Department of Transportation

- Oversee statewide quality assurance of asphalt cements, crack-sealants, liquid asphalts, and performance graded binders.
- Maintain AASHTO accreditation for the asphalt laboratory.
- Provide technical expertise on the design, use, and problems associated with the use of bituminous materials.
- Certify binder suppliers.
- Technical expert on binder testing for the Superpave Lead State Program.
- Train UDOT technicians and University students as needed.
- Foundation Design Engineer of structures on Interstate and primary design projects and slope stability investigations.
- Presently serve on the Rocky Mountain Asphalt User-Producer Groups Binder sub-committee.
- Previously served on board of Directors for the Western Cooperative Test Group.
- Wrote UDOT's Binder Management plan.

Cameron C. Petersen, page 2

12/70 to 6/74 **Asphalt Laboratory Engineer**
Utah Department of Transportation Central Materials Laboratory

- < Supervised statewide quality acceptance testing of asphalt cements, crack sealants, liquid asphalts and asphalt additives/modifiers.
- < Participated in research testing of hydrated lime, asphalt membranes, CBR/R value correlation.

6/69 to 12/70 **Highway Engineering Rotational Trainee**
Utah Department of Transportation

- < Rotational training in materials, construction, hydraulics, roadway design, and traffic engineering.

10/63 to 6/69 **Acting District Right-of-Way Design Engineer**
Utah Department of Transportation

- < Designed right-of-way corridors for District transportation facilities. Duties required knowledge of land and office surveying, mapping, and property descriptions.

Training

12/70 to Present

- < Annual asphalt institute training seminars
- < Annual Asphalt Institute seminars, student and presenter
- < Asphalt emulsion testing and usage, NTI
- < Asphalt emulsion training, Akzo-Chemi International
- < Hot-mix asphalt production, NTI
- < Asphalt Binder, Asphalt Institute in Lexington, Kentucky
- < Materials, hydraulics, highway construction, roadway design, and traffic engineering, 1.5 years rotational on-the-job training

Murari Man Pradhan, Ph. D., P.E.

Professional License: P.E. (Utah)

Adjunct Instructor: University of Utah and Salt Lake Community College.

Special Assignments: UDOT Long Term Pavement Performance (LTPP) Coordinator.
National Council for Highway Research Program (NCHRP) advisory panel member for Project
Panel 20-50(14), Variation of AC Air Voids as a Function of Specifications and its Significance to Performance.
Co-chair of Mixture, Construction, and Specification of Rocky Mountain Asphalt User/Producer (RMAU/P) Group
NCHRP advisory panel member for Project Panel D09-29, Simple Performance Tester for Superpave Mix Design.
Member for TRB A3C05 Committees on Pavement Maintenance and A2D03 Committee on Characteristics of Bituminous-Aggregate Combinations to Meet Surface Requirements.
NCHRP advisory panel member for Project Panel D09-37, Using Surface Energy Measurements to Select Materials for Asphalt Pavements.

Education
Ph. D. in Civil Engineering, Montana State University (MSU), Bozeman, Montana, 1995.
Dissertation Topic: Permanent Deformation Characteristics of Binder Aggregate Mixture Containing Conventional and Modified Asphalt Binders.

Master of Science in Civil Engineering, MSU, Bozeman, MT. 1990.

Master of Science in Industrial and Management Engineering, MSU, Bozeman, MT. 1989.

Diploma in Public Administration, Tribhuvan University, Kathmandu, Nepal. 1973.

Bachelor of Engineering (Mechanical), Andhra University, Waltair, India. 1970.

Presentation and Publication

Lime Slurry in Hot Mix Asphalt, **Approved for presentation in Western Research Institute, 2000**
Pavement Impacts and Revenue Estimates related to the proposed Lowe (Eagle) Distribution Center at Tooele Army Depot Tooele, Utah, **UDOT Research Report, 2000.**
Evaluation of Load Transfer Efficiency of Rigid Pavements, **Rocky Mountain Portland Cement Concrete Pavement Conference, 2000.**
Super Pavement 101: Revisiting the Basic of SHRP volumetric Design and PG Asphalts, **1999 UDOT Engineers Conference, 1999.**
Selection of the Methods of Evaluation of Utah Rigid Pavement Conditions, **TRB, 1999.**
Analysis of Current QC/QA Specification using OC Curve as applied on I-80, Lambs to Kimballs Project and Recommendation of Statistical based Specification - a Report, 1997.

***Evaluation and Selection of the methods for Load Transfer, Loss of Support, Structural Properties of Utah Rigid Pavements,* Submitted for presentation UDOT Engineering Conference, 1998.**
***Montana Experience with Polymer Modified Asphalt*, Third Materials Engineering Conference, ASCE, 1994.**
***Large-Stone Aggregate-Modified Asphalt Mixes*, Third Materials Engineering Conference, ASCE, 1994.**
***Assessing the Effects of Commercial Modifiers on Montana Asphalts by Conventional Testing Methods,* Transportation Research Board, 1993.**

Experience
Utah Department of Transportation, 1994 -
Bituminous Specialist Engineer,

Supervised Bituminous laboratory for Superpave mix design and verification tests, speciality tests such as Hamburg Rutting test and Pavement Analyzer for Rutting and Fatigue tests, Binder extraction and evaluation, Aggregate characteristics tests. - HMA production, review the production record, trouble shooting for compaction and other problems.

Review and modify the HMA specifications to meet the changes in practices.

Represent UDOT in Rocky Mountain Asphalt User Producer Group (RMAU/PG) and other regional and national task groups.

Present status report in RMAU/PG and papers in TRB.

Field visits for trouble shooting and analysis.

Pavement Structural Analysis Engineer,

Analysis and evaluation of the Falling Weight Deflectometer (FWD) for structural integrity of the existing pavements and design pavement overlays. Following related works were conducted:

- Analyzed QC/QA criterion of flexible pavement using construction records.
- Preparing Statistical based specifications.
- Construction data observation and statistical analysis including Operating Characteristics (OC) curve.
- Conducted risk analysis on UDOT specification.
- Studied SHRP level 1 design methods and Utah specifications.
- Developed remaining life prediction of existing pavement at system level pavement management.
- Conducted structural evaluation of I-15 parallel roads and recommended the overlay requirements.
- Conducted structural evaluation and design of the truck haul routes.
- Conducted Beta testing of a AASHTO based pavement design software DARWin 3.0 for both new pavement and overlay including life cycle cost analysis.
- Presented sensitivity analysis on the rigid pavement design parameters to the Regional Engineers.
- Presented training course on non-destructive pavement testing using Falling Weight Deflectometer (FWD), back calculation, deflection basin, structural evaluation of existing pavement and overlay design using various software programs.
- Evaluated various structural evaluation software programs, such as DARWin, Modulus, Michback, Evercal, ELSYM5, Cheveron and HWY.
- Selected Modulus, Michback, DARWin, and HWY for UDOT project level structural evaluation and overlay design procedure.
- Evaluated various load transfer efficiency and loss of support (void detection) on the rigid pavement joints and established UDOT method.
- Conducted structural evaluation of rigid pavement.

Graduate Research Assistant, MSU, Department of Civil Engineering, 1988-1993.

- Testing of physical asphalt tests (Penetration, Ductility, Softening point, Viscosity, Adhesion, and Thin Film Oven Test) on both modified and unmodified asphalt. Marshall properties tests both on conventional and large stone specimens.
- Testing resistance of bituminous mixture to moisture induced damage on the specimens with polymer modified specimens.
- Testing Marshall method of mix design using polymer modified and unmodified asphalts for both conventional and large stone aggregates with and without mineral filler.
- Investigation of cracks and ruts. Measurement of ruts using Rainhart profilograph of pre-construction and post-construction pavement surface of the test section.
- Monitoring of the construction of PMBS overlays using Polymer modified asphalt and control section and subsequent annual pavement conditions.
- Preparation of special provision for modified asphalt.
- First hand experience of rheological and failure characteristics performance based SHRP tests at University of California, Berkeley.
- Observation of High Pressure Liquid Chromatography as a method of measuring asphalt composition in Jennings Laboratory, MSU.
- Performance based SHRP binder tests, Brookfield Viscometer, Direct Tension Test, Pressure Aging Vessel, Bending Beam Rheometer, and Dynamic Shear Rheometer
- Traffic simulation, economic analysis, experiment designs, operations research, HCS and simulation software, and statistical analysis.

Divisional Engineer, HMG of Nepal, Department of Roads, Kathmandu, Nepal. 1971-87.

- Established operation and maintenance workshops of the construction equipment throughout the Kingdom of Nepal.
- Managed the workshop organization including budget of equipment.
- Supervised the construction works.
- Prepared specification for equipment and bid documents.
- Invited, evaluated and recommended bids for equipment and vehicles, commissioned and accepted the equipment.
- Implemented preventative maintenance and predictive maintenance practices.
- Planned and executed major overhaul of construction equipment and vehicles.
- Managed personnel, technical and administrative.
- Trained personnel on the operation and maintenance of equipment and vehicles.
- Planned and procured the spare parts.
- Developed and implemented the inventory system for equipment and spare parts, which could be updated in Nepal.

Activities : Member of American Society of Civil Engineers (USA)
Member of Institute of Industrial Engineers (USA)
Individual Associate Transportation Research Board (USA)
ACI Concrete Field Testing Technician-Grade I
Member of Association of Asphalt Paving Technologists

Roy Ulibarri
Materials Engineer Assistant
Materials Test Technician IV

Education

Certificate of Accomplishment in Micro Computer Technology
Utah Technical College, 1985-1986

Professional Recognition

NICET Level IV Certified in Highway Materials and Construction Testing

Experience

1992 to Present **Materials Engineer Assistant, (Materials Test Technician IV)**
Utah Department of Transportation
Central Material Asphalt Laboratory. Quality control testing of asphalt cement, cut-backs, emulsions, and crack-sealants. SHIP Binder testing.

1982 to 1992 **Field Construction Testing Technician for project quality control**
Utah Department of Transportation
Concrete, aggregate, soil, and nuclear gauge testing

1982 to 1990 **Field Construction Testing**

Training

Expertise is monitored bi-annually by participation in the AASHTO Materials Reference Laboratory Certification Program.

On the job training by senior laboratory technicians.

40 hours of SHRP Binder Testing training at the Asphalt Institute.

AsphaltPro DTT Operation's Course-Instron Training Center

Asphalt Lab

Michael R. Nash
Materials Test Technician (IV)

Education

University of Utah, 1959 to 1963, Chemistry and Physics.

Professional Recognition

NICET Level 4 certification in Highway Materials Testing.

Experience

1965 to 1968 **Laboratory Technician**
Union Gil Research, Yorba Linda, California.
Experimental testing of petroleum cracking catalysts.

1971 to Present **Research Analyst**
Utah Department of Transportation
Research Analyst for 21 years, Laboratory Technician in asphalt testing for 8 years.

Training

Expertise is monitored bi-annually by participation in the AASHTO Materials Reference Laboratory Certification Program.

On the job training by senior laboratory technicians.

40 hours of SHRP binder testing training at the Asphalt Institute.

Aggregate Lab

Robert S. Tripp
Materials Testing Technician II

EDUCATION

1981	**G.E.D.** St. Francis Continuing Education Program, Fort Carson, CO. (Military Program)
1983-85	**Auto Mechanics Diploma,** Salt Lake Community College, Salt Lake City, UT

EXPERIENCE

1975-83	**U.S. Army, Sargent E-5, Auto Mechanic** (Honorable Discharged) Receive Army Accommodation for excellent service & Good Conduct Medal.
1986-87	**Lab Technician / Driller Assistant**, Delta Geotechnical Consultants INC. Performed standard testing of soils and aggregates. Concrete testing of air, slump and the making of cylinders for strength tests. Prepared test site for drilling. Assisted drilling operations.
1987-88	**Survey Technician**, Richard Fox Mineral Surveying Installed electrode basses at previously established survey points and installed wiring system in a grid pattern for mineral surveys.
1988-90	**Materials Testing Technician** (Seasonal) Utah Department of Transportation - Region 2 Materials Lab, SLC, UT Performed standard and complex testing of soils, aggregates and bituminous materials. Prepared and performed mix designs for construction and maintenance projects within Region-2, UDOT.
1990-97	**Lab Technician**, Staker Paving and Construction, SLC, UT Performed standard and complex testings of soils, aggregates and bituminous materials. Performed mix designs on asphalt concrete pavements to be submitted to various States and Local Government agencies for their projects acceptance. Supervised and trained personnel in standard lab testing procedures. Incorporated the use of computer to enhanced lab documentation process. Radiation officer responsibilities for the lab. Maintained and provided training for all portable nuclear density gauges.
1998-99	**Lab Technician**, Garco Testing Laboratories, SLC, UT Performed all asphalt mix design related testings. Performed all Quality Control testings for asphalt concrete. Operate nuclear density gauges.

TRAINING

Jun., 1986	**Certified Nuclear Density Testing Operator**, Nuclear Testing Services Inc., SLC, UT
Jan., 1997	**Material Control and Acceptance Quality Assurance Certificate**, National Highway Institute, SLC, UT
Mar., 1997	**Hot mix Asphalt Construction**, National Highway Institute, SLC, UT
Nov., 1999	**ACI Concrete Field Testing Technician - Grade I** American Concrete Institute, SLC, Utah
Aug., 2000	**Certified Laboratory Testing Technician, UDOT, SLC, UT** WAQTC(Western Alliance Quality Transportation Construction)
Apr., 2002	**Certified Asphalt Testing Technician, UDOT, SLC, UT** WAQTC (Western Alliance Quality Transportation Construction)
Apr., 2002	**Certified Embankment and Density Testings Technician, UDOT, SLC, UT** WAQTC (Western Alliance Quality Transportation Construction)
Apr., 2002	**Certified Aggregate Testing Technician, UDOT, SLC, UT** WAQTC (Western Alliance Quality Transportation Construction)

SKILLS

- Knowledge of computer hardware and software
- Knowledge of materials testing equipment and procedures
- Supervise technicians in proper sampling and testing of materials procedures
- Capable of computing, recording and reporting results of materials testing
- Knowledge of operating portable nuclear density gauge
- Knowledge of Asphalt Mix Designs and performed all the tasks required design process
- Knowledge of concrete sampling for acceptance
- Knowledge of concrete compressive strenght
- Knowledge of bolt testing
- Knowledge of rebar testing

Steven E. Niederhauser
Bituminous Laboratory Supervisor
Materials Engineer Assistant

Education

Strategic Highway Research Program (SHIP) Level 1
Volumetric Design. 40 hours progressive Training, February 1997
Superpave Mixture Design and Analysis, March 1994
40 hours of formal Professional Development
Transportation Engineering Technology VI, June 1989
Transportation Engineering Technology V, May 1988
Highway Engineering Technology Program, April 7, 1976 (four year program)
Contract Plan Reading Course, October 3, 1973

Employment

3/69 to Present **Bituminous Lab Supervisor**, Utah Department of Transportation.

2/69 to 3/69 Materials and Research Division, Utah Department of Transportation.

1964 to 2/69 Field construction in Region 2, surveying, field lab testing, and inspection.

Experience

- < Write and assist with testing procedures and specifications in the Bituminous area.
- < Participate in many Research projects such as:
- < Development and Quality Control of Recycled Hot Mix Asphaltic Concrete Pavement in Utah
- < Control Strips for pavement densification
- < Immersion Compression Study for Lime Additive and test repeatability
- < Evaluation of the Troxler 3241-B Asphalt Content Gauge 1987 & 1988
- < Testing of asphalt additives - Somat, Lake Trinidad Asphalt, and Gilsonite development of the Asphalt Extraction method using Terpine Hydrocarbon Solvents (Bio-act)
- < Development of the Georgia Loaded Wheel Tester
- < Member, expert committee for the LWT
- < Currently working with SHIP's procedures
- < Train region lab and field personnel in new and existing procedures.
- < Trouble shoots on request of project and region engineers' problems with bituminous paving operations.

Clark Daniel Allen

Materials Testing Technician II

Education

2001 UDOT T3 2nd year Education Program
1980 High School Diploma, Lehi High School, Lehi Utah

Experience

1999 to Present — Materials Laboratory Testing Technician (in training) UDOT
Being trained in AASHTO Hot Mix Asphalt (HMA) and UDOT Testings Procedures.

1996 — Warehouse Technician, Salt Lake City UDOT

- Assisted in UDOT Headquarters Warehouse operations, distribution of supplies and inventory stocks.
- Operate Fork Lift, Pallet Jacks and other warehouse equipment

Certification and Training

- NICET Certification Level III
- Certified Fork Lift Operator

Training

- Being trained to operate all testing equipment in Bituminous Lab
- Proficient in operating the Pavement Analyzer Rut Testing, Fatigue Testing, Hamburg Wheel Tracker, AASHTO T-209, AASHTO T-308, AASHTO T-30 and AASHTO T-248.
- Sample preparation and other lab operations

Certification Lab

Graham A. Starkie
Calibration Certification Supervisor
Materials Test Technician IV

Education

University of Utah - General Education and Fine Arts, 1971-1977
Graduate: South High School, Salt Lake City, Utah - 1969
Graduate: Electronics School - Collins Radio Corp USMC, 1969-70
Graduate with Honors: Radio Repair Technician USMC 1970
Attended: Utah Technical College - SMAW MIG & TIG Welding, 1985

Professional Recognition

< Member National Building Engineer Conference
< Member National Energy Management Group

Experience

3/94 to Present **Calibration and Repair POE Scale Supervisor, UDOT**
Calibrate and repair laboratory equipment, perform property survey and technical evaluation of laboratory equipment.

8/85 to 3/94 **State of Utah, DFCM**
Supervised daily operation and maintenance of nine State buildings, 11 State agencies. Supervised up to 12 full-time employees and numerous support and part-time personnel. Worked with contractors in project development through construction and all phases of building management and maintenance.

8/72 to 8/85 **Construction Superintendent, Property Management**
Building Management

6/69 to 7/72 **Aircraft Radio Technician; Electronics Technician**
Active Duty, United States Marine Corp

Certification Lab

Ross W. Raleigh

Laboratory Certification Specialist II
Materials Test Technician III

Education

High School Graduate 1977
South High School, Salt Lake City, Utah
Technical School - 1978-79 Welding Associate
International Systems of America - 1993 Electronics

Experience

12/95 to Present **Laboratory Certification Specialist II, (Materials Test Tech III) UDOT**
Certification/Calibration Unit

- < Repair, calibrate, and maintain a wide variety of laboratory equipment, presses, compactors, sieves etc.
- < Repair/rebuild and maintain Port-of-Entry Scale Systems.
- < Conduct regular field trouble shooting, and equipment condition analysis.

1/84 to 5/88 **Equipment Management and Repair Service.** Vickers

- < Maintained and repaired equipment used in all phases of construction.
- < Evaluated salvage repair/rebuilt hydraulic and pneumatic controls.
- < Fabricated machine repair parts using accepted methods and practices e.g. welding, Mig, TIG, Smaw, Oxy Acct.

9/80 to 1/84 **Kaiser Chemical**

- < Worked in all phases of Potassium Chloride production quality control.
- < Lab-tested various grades of potash, performed density tests, and evap cycle tests.
- < Maintained and calibrated ovens as needed.
- < Performed salinity tests, specific gravity tests etc.
- < Prepared test results and maintain record books.

Certification Lab

Charles A. Shafer
Laboratory Certification Specialist II
Materials Test Technician III

Education

Graduate of Granite High School 1959
Salt Lake City, Utah

Experience

4/1965 to
Present **Laboratory Certification Specialist, (Materials Test Technician III), UDOT**

Worked in various stages of highway construction.

- < Worked on survey crews throughout District II and performed boundary surveys statewide for all state agencies. Performed surveys for special projects section, eminent domain, and property litigation.
- < Performed surveys of highway centerline, right of way, construction quantities, layouts, calculations and safety practices relating to highway construction.
- < Inspected concrete and asphalt batch plants to ensure compliance with standard requirements.
- < Performed laboratory tests evaluating materials with a variety of testing equipment to maintain specification compliance in highway construction.

Certification Lab
Nuclear Gauge Lab

Pam White

Laboratory Certification Technician

Education

High School GED 1994

Training

Nuclear Testing Equipment and Radiological Safety - Nuclear Testing

Nuclear Testing Equipment and Radiological Safety - Troxler Electronics Laboratories -

Radiation Safety Officer Course - Troxler Electronics Laboratories

Service Training Class - Troxler Electronics Laboratories

Professional Experience

1995 to Present **Spec I - Nuclear Gauge Laboratory**
Utah Department of Transportation

- Maintain, calibrate and repair all moisture density and thin layer gauges
- Train and certify all UDOT and consultant personnel on correct use of gauges and radiation safety.
- Store and transport gauges.
- Monitor use of personnel monitoring devices (film badges), maintain applicable files on devices and on personnel exposure to radiation.
- Conduct semi-annual leak testing and physical inventory of all gauges, including asphalt content gauges, and maintain files on testing and inventory.
- Calibrate survey meters every six months, and maintain calibration files.
- Train and certify all UDOT and consultant personnel on radiation safety.

1989 to 1995 Seasonal work
Utah Department of Transportation

Seasonal employment in Region 2 Maintenance, Survey Crew, and Region 2 Materials Laboratory.

Gerald L. Carter
Equipment Certification Specialist

Education

Graduate: Associate Degree - Business Management - Utah Valley Technical College.

Commission: 2nd Lt. Utah state Military Academy

Certification: WAQTC Concrete Testing Tech, WAQTC Aggregate Testing.

Experience

1998 - Present: Equipment Certification Specialist

1987 - 1998: Mechanical Engineering Technician, Collision safety Engineer
- Inspected Equipment
- Operated Surveying equipment
- Inspected accident scene and accident vehicle
- Built scale models of vehicles and scenes
- Prepared courtroom trial exhibits, 3-D models, photographs

1984-1987: Shipping Supervisor/Foreman USX Geneva Works
- Recording and handling shipment of steel cast and sheet metal
- Supervise shipping crew workers operations and scheduling
- Daily inspection of various equipment including overhead cranes

1974 - 1984 Security and Safety Supervision USX Geneva Works
- Supervise plant security and fireman
- Supervise EMT training and fire equipment inspection
- Handle the emergency situations, i.e., accidents, fires, etc.
- Control vehicle and personnel access to the plant

1957 - 1969 Utah National Guard Corp of Engineers
- Captain, Unit Commander, 116th Eng Co. Springville, Ut.
- Supervise a concentration of engineering equipment in support of an Engineering Group

Certification Lab

Robert B. Winters
Materials Test Technician

Education

1995 to Present	**Enrolled in CE program** Salt Lake Community College	GPA 3.69
1989	**Transportation Engineering Technology Program** Standard 4-year program completed 1989 Administered by UDOT and the University of Utah	GPA 3.80
1991	**Advanced 2-year Program** Administered by UDOT and Westminster College	GPA 3.50
1976	**High School Diploma**, American Fork High School	GPA 3.25

Certifications And Training

- ACI certification in concrete field testing and inspection
- Level I examination, June 1995
- NICET level III Certification in Highway Materials, May 1994
- AMRL Certified in Physical Testing of Materials
- CCRL Certified in Concrete Testing and Inspection
- NHI Course No. 13442, Materials Control and Acceptance - Quality Assurance, 1995

Experience

12/ 94 to Present **Materials Test Technician III**
Quality Assurance Section, Utah Department of Transportation

- Perform all the physical tests in the Physical Testing and Paint Labs.
- Test and inspect precast and prestressed concrete products at fabricator's plants.
- Test pavement marking products.
- Inspect welding of structural steel bridge girders at the fabrication plants and in the field.
- Inspect materials and products used in highway construction in the field.

4/93 to 12/94 **Lead Driller, Geotechnical Division**
Utah Department of Transportation
Conducted soil sampling for foundation testing and design.

Robert B. Winters, page 2

12/92 to 4/93 **Materials Testing Technician**, Physical Testing Lab
Utah Department of Transportation

- Conducted quality control tests on highway materials.
- Worked in the field as a precast concrete inspector, materials inspector and structural steel inspector.

6/90 to 12/92 **Lead Driller, Geotechnical Division**
Utah Department of Transportation
Conducted soil sampling for foundation testing and design.

11/89 to 6/90 **Technician, Bituminous Lab**
Utah Department of Transportation
Conducted all quality control tests on liquid bituminous products.

1983 to 1989 **Journeyman Driller, Geotechnical Division**
Utah Department of Transportation
Conducted sampling for foundation testing and design.

Gary G. Sheppick
Materials Engineer Assistant

Education

1963 High school diploma, Bingham High School, Copperton, Utah

Experience

1992 to Present **Materials Engineer Assistant**
Utah Department of Transportation, Salt Lake City, Utah

- Inspect and test prestress bridge girders and precast concrete products.
- Conduct examinations for the Concrete Testing Certification Program within UDOT statewide.
- Coordinate the CCRL certification program within UDOT.
- Assist in Cement Quality Management Systems among accredited cement suppliers both in and outside of Utah.

1985 to 1992 Calvin L. Rampion Complex
Utah Department of Transportation, Salt Lake City, Utah

- Engineering Assistance, Locations and Environmental Preconstruction Section.
- Performed cadastral surveys on new state routes statewide.
- Implemented statewide coordinate systems on state highways. Worked with highway designers and right of way agents within UDOT.
- Surveyed various airport runways for the Aeronautical Division.
- Managed the survey program for Water Resources Division in conjunction with the Attorney General in settling a boundary dispute in the Bear Lake area.
- Performed Global Positioning Survey (G.P.S.) for various projects statewide.

1979 to 1985 Calvin L. Rampion Complex
Utah Department of Transportation
Salt Lake City, Utah

- Worked as Instrument Man Technician, Right of Way Division and special projects.
- Surveyed properties along Jordan River Parkway, Salt Lake City and Provo River Parkway for the Department of Natural Resources.
- Surveyed numerous surplus properties for the General Attorney Office.

Gary G. Sheppick, page 2

1968 to 1979 District II
Utah Department of Transportation, Salt Lake City, Utah

- Instrument man technician, Chief of Party
- Surveyed for construction, slope staking, right of way boundaries.
- Conducted layout work for Interstate 80 bridges, box culverts and alignment.
- Worked as lab technician in the asphalt testing area on numerous pavement overlay projects. Performed Marshall test and Gradation analysis.

Certifications and Ratings

- American Concrete Institute (ACI) Field Testing Technician Grade I Certification
- Completed "Concrete and Field Practices" seminar by the International Building Officials
- Qualified for taking professional register land surveying exam

Vocational Training

- ACI Concrete Field Testing Technician Grade I program
- On site prestress bridge girders inspection training
- Computer Spreadsheet Program course (Quattro Pro for Windows)
- Engineering Surveying course from Trade Tech. Community College
- Received various formal and informal in house training offered by UDOT since 1967

Cement Lab

Robert Davis
Materials Test Technician I

Education

2000 - Present **Civil Engineering**
University of Utah
Salt Lake City, Utah

1999 **Bachelors Degree**
Environmental Soil/Water Science
Utah State University
Logan, Utah

1995 **Associate of Science Degree**
College of Eastern Utah
Price, Utah

Experience

10/99 - Present **Materials Test Technician**
Utah Department of Transportation
Salt Lake City, Utah
- Perform physical testing of cement/flyash
- Maintain CCRL accreditation
- Obtain/maintain ACI accreditation

7/99 - 10/99 **Lab/Environmental Technician**
Agra Earth and Environmental
Salt Lake City, Utah
- Prepared trial mixes (Concrete)
- Conducted compression strength tests (Concrete)
- Performed Marshall tests (Asphalt)
- Completed Proctor, Plasticity Index, Gradations, Moisture Content Testing (Soil)
- Maintained AMRL accreditation

Sara J. Carlock
Chemist

Education

1977 **Bachelor of Science in Chemistry,** Brigham Young University

Experience

1996 to Present **Chemist III**
Utah Department of Transportation - Salt Lake City, Utah

- Chemical testing of cement, fly ash, lime, zinc coating materials, asphalts, concrete, soil, and water.
- IR and GC analysis on paint and paint related products, asphalt emulsions, concrete additives, concrete sealers and curing compounds, and other miscellaneous materials.

1992 to 1996 **Chemist**
CTL Engineering, Inc. - Columbus, Ohio

- Performed inorganic, metals, fuels and wet chemical analysis
- Analyzed drinking water, waste water, soils, TCLP wastes and metal alloys by AA
- Prepared samples for analysis by wet digestion, soxhlet extraction, sonification extractions, etc.
- Performed various wet chemical testing according to EPA and ASTM protocols.
- Operated IR, GC and GC/MS as needed to assist other personnel.

1977 to 1978 **Junior Chemist**
Conoco, Inc. - Ponca City, Oklahoma

- Operated isotope ratio mass spectrometer.
- Prepared oil, kerogen and carbonate samples for C^{13}/C^{12} analysis.
- Prepared water for D^2/H^2 analysis.

1975 **Technician**
Animal Diseases Research Institute - Lethbridge, Canada
Biochemistry Section

- Prepared blood plasma samples and performed analysis on AA.
  Completed needed data processing.

Virology Section

- Prepared ADV antigen via extraction and ultracentrifugation.
- Performed antigen/antibody testing using electrophoresis.

Training

1994 **Atomic Spectroscopy Workshop**, Varian Seminar - Cincinnati, Ohio

Geotechnical Division

Keith Brown, P.E.
Chief Geotechnical Engineer

Experience

6/97 to Present	**Chief Geotechnical Engineer**, Utah Department of Transportation
9/95 to 6/97	**Manager Value Engineering**, Utah Department of Transportation
1/93 to 9/95	**Value Engineer (preconstruction emphasis)**, Utah Department of Transportation
1/88 to 1/93	**Transportation Design Engineer, Division of Traffic and Safety** Utah Department of Transportation
1987 to 1988	**Civil Engineering Technician / Surveyor**, Bureau of Land Management

Training

- Participated in the following Federal Highway Administration sponsored workshops: Value Engineering; Field Inspection and Rehabilitation of Traffic Control Devices; Roadside Design Guide; Freeway Management; Concrete Pavements
- First National Conference of the Geo-Institute sponsored by ASCE
- 23rd Annual Northwest Geotechnical Workshop

Affiliations

- UDOT Traffic Engineering Advisory Committee
- UDOT New Products Panel
- Institute of Transportation Engineers
- AASHTO Task Force on Value Engineering
- Northwest Geotechnical Steering Committee

Education

3/88	**Bachelor of Science - Civil Engineering** University of Utah
10/92	**Licenced Professional Engineer - State of Utah**

Geotechnical Division

Darin L. Sjoblom, P.E.
Geotechnical Testing Engineer

Education

1994 M.S., Civil and Environmental Engineering, Utah State University, Logan, Utah
1993 B.S., Civil Engineering, Utah State University

Experience

1996 to Present **Geotechnical/Testing Engineer**
Utah Department of Transportation, Salt Lake City, Utah

- Manage the Foundation and Aggregate Laboratories for the UDOT Geotechnical Division.
- Schedule new testing, and review completed geotechnical testing results. Supervise one Material Engineer Assistant, one Material Technician III.
- Direct maintenance, repair and ordering of new testing equipment.
- Geotechnical engineering designer for DOT projects.

1995 **Field Engineer**
Utah Department of Transportation, Ogden, Utah
Field engineer in charge of bridge and wall construction at SR-89/SR-193 interchange in Layton, Utah. Directed installation and inspection of sheet pile walls, H-pile and lagging walls, and drilled concrete shafts.

1994 **Rotational Engineer**
Utah Department of Transportation, Salt Lake City, Utah

- Temporarily managed the Foundation and Aggregate Laboratories for the UDOT Geotechnical Division.
- Scheduled new testing and reviewed completed geotechnical testing results.
- Conducted tests for Foundation laboratory. Geotechnical engineering designer for DOT projects by assignment.

1993 to 1994 **Graduate Teaching Assistant**
Utah State University, Logan, Utah
Tutored and taught Engineering Statics courses each quarter, proctored exams, and graded student homework.

Darin L. Sjoblom, page 2

1992 to 1993 (Summers) **Civil Engineering Intern**
Utah Department of Transportation, Salt Lake City, Utah
Worked on survey crew performing survey for new bridge construction and concrete repave of Interstate 80 at Black Rock Interchange during summer of 1992. Worked in Foundations and Aggregate laboratory performing soils and aggregate tests and doing geotechnical design during summer of 1993.

1990 to 1991 (Summers) **Civil Engineering Intern**
Bountiful City Engineering, Bountiful, Utah
Performed survey for new alignments and widening of existing alignments. Performed major concrete replacement survey. Acted as survey crew chief during summer of 1991.

Ron Markovich
Materials Test Technician II

Education

1961 High School Diploma, Bingham High School, Copperton, Utah

Experience

1988 to Present **Materials Test Technician**
Utah Department of Transportation, Salt Lake City, Utah

In-shop inspection of structural steel, bridge inspection to ensure that all materials and workmanship conform to the contract documentation.

- QC certifications C.W.I
- All certification of Fabrication shop category Level I to III
- Welding certification of Personnel and Equipment
- Final Report of inspection for compliance to approved shop drawings

Certifications and Ratings

- NICET Level II Construction
- Ultrasonic Inspection Level I
- Ultrasonic Inspection Level II
- National Highway Institute Economical and Fatigue Resistant Steel Bridge Details
- National Highway Institute Bridge Painting Inspection

Training

- Bridge Inspection Utah Department of Transportation Fabricator Utah Pacific Bridge and Steel, Lindon, Mountain States Steel, Lindon, Utah

- Bridge Inspection Nevada Department of Transportation, Fabrication Utah Pacific Bridge and Steel, Lindon, Utah
  Mountain States Steel, Lindon, Utah

- Bridge Inspection Idaho Department of Transportation Fabrication Utah Pacific Bridge and Steel

Bryan N. Lee, P.E.
Quality Systems Engineer

Education

1984	**Bachelor of Science**, **JMC** University of Utah,
1984	**Bachelor of Science, Political Science** University of Utah,
1995	**Construction Specification Institute (CSI)** document training
1996	**Completed eight-year UDOT Fundamentals in Engineering and Advanced Training Program**, University of Utah, Westminster College, Weber State College, Southern Utah State University, Brigham Young University
1997	Completed **Certified Public Manager Program**, State of Utah

License

Professional Engineer, State of Utah, # 323883-2202

Experience

Apr 1998 to Present — **Quality Systems Engineer**, **Quality Assurance Division**

- Assist in administration of UDOT WAQTC Technician Training Qualification Program.
- Write, edit, revise manuals for the Materials Division including Minimum Sampling and Testing Guide, Materials Manual Part 8, Quality Assurance Manual, and the Quality Systems Manual.
- Administer UDOT Laboratory Qualification Program. Conduct laboratory inspections, maintain laboratory database.

Oct. 1996 to Apr 1998 — **Technical Writer, Materials Division**

- Performed technical writing duties for newly formed Materials Quality Assurance Division.

Nov 1988 to Oct. 1996 — **Technical Writer, Engineering Services Division**

- Edited and maintained standard specifications manual and all special provisions. .Served as technical specialist for all writing and word processing related matters within and outside of the division. Assisted in the preparation of grants for the Ports of Entry.

Professional Affiliations

- Associate Member, Institute of Traffic Engineers
- Certified Public Manger, State of Utah
- Treasurer and member of the Board of Directors for the Utah Society of Certified Public Managers, 1996-1997

JOHN DAVID A. NEIL, P.E.
Lab Accreditation Engineer

Employment and License

Utah Department of Transportation since June 1968:
Materials Engineer since May 1996.

Environmental and Acoustical Engineer from April 1973 through April 1996.
Engineer-in-training from June 1968 through March 1973, providing cross-training in all basic areas of highway right-of-way, planning, design, and construction

PE license in Civil Engineering: Utah Ref # 22-153955-2202

Education

Bachelor of Engineering Science (5-yr program) Degree (Civil Engineering) from Brigham Young University, May 1971.

Post-graduate work in acoustical science and environmental science at University of Utah, 1974-1976, not for credit.

Post-graduate work toward MBA, 24 credit hours, University of Phoenix, 1986-1988

Special training courses useful in environmental engineering:

Contract Plan Reading, UDOT 01/72
Fundamentals & Abatement of Highway Traffic Noise, NHI 6/73
Highway Noise, Bolt Beranek, & Newman 12/73
Multi protection Design of Buildings, DCPA /74
Caline Air Quality Methodology, NHI /75
Highway Noise Barrier Workshop/Field Studies, NHI 12/78
Industrial Hearing Conservation Seminar, OSHA, Quest /81, 83
Value Engineering, NHI 10/83
Preparation of Environmental Documents, FHWA. UDOT 01/83
Hydrology, NHI 01/86
Time Management, Franklin Inst. /86, Covey /96
Seven Habits of Highly Successful People, Covey Tel8 video, March 99

John D. Niel, Page 2

Affiliations

- Current Utah representative on the Highway Noise Subcommittee of the U.S. Transportation Research Board, National Research Council.
- Former member of National Association of Noise Control Officials, Acoustical Society of America, American Institute of Physics.
- Invited to join an international noise research ad hoc group in France.

Biographies

- Men of Achievement, 8th ed, 1981, England
- Who's Who in Technology Today, 2nd ed, 1981, Pittsburgh, PA
- Personalities of the West and Midwest, 7th ed, 1981, Raleigh, NC
- Who's Who in the West, 17th ed, 1980, Chicago, IL
- (invitations to join others)

Contributions

- Contributor to FHWA Highway Traffic Noise Model (TNM) computer program, participated in TNM review workshop in Boston, Aug 95.
- Contributor to University of Utah syllabus for teaching acoustical science.
- Reviewed two articles from other authors prior to publishing in a national engineering journal.
- Authored scores of technical reports for environmental assessments.
- Interviewed for article *Breaking the Noise Barrier*, by Joyce Marder, Utah Holiday Magazine, June 1990.

Technical Witness in Litigations

For UDOT, in many cases of proximity damage from highway noise.

Technical Consultant

Consulted for various entities (private and public), when time permits, including but not limited to the following:

- Workplace safety per UOSH (OSHA) noise regulations.
- Complaints from private property owners near transportation noise sources.
- Land use planning & development adjacent to transportation facilities.
- Effect of highway noise on poultry farms, etc.
- Student and graduate student research projects.
- Effect of development of a Grand Prix minicar track in Parley's Canyon, Wasatch County.
- On ANCLUCS steering committee for FAA/Salt Lake City International Airport noise development plan.

Lecture Invitations

Nov 96, University of Utah, Graduate vocational seminar on Highway Noise Engineering
Feb 97, Brigham Young University, Graduate vocational seminar on Transportation Engineering
Oct 97, University of Utah, Senior vocational seminar on I-15 reconstruction & innovations

George William (Bill) Redford

Training Coordinator

Employment Summary
28 years experience in materials testing and inspection including the following general categories: Soil, Reinforced Concrete, Prestressed Concrete, Structural Masonry, Structural Steel, Spray-applied Fireproofing. Duties have included those of material testing technician, inspector, inspection services manager and laboratory manager.

Employment History
Current – Utah Department of Transportation
Job Title – Material Tech IV
Duties – Training Coordinator for the TTQP program including certification training for the following WAQTC and UDOT TTQP categories: Aggregate; Asphalt; Concrete; Embankment, Base and In-place Density; Laboratory; Superpave. Duties include presenting certification seminars and conducting certification examinations for UDOT and consultant material testing personnel.

Prior Employment
Garco Testing Laboratories – 10 years
Salt Lake City, Utah
Job Title(s): Laboratory Manager, Inspection Services Manager, Inspector.
Duties: Performed inspections of reinforced and prestressed concrete, structural masonry, spray-applied fireproofing, and soil. Supervised other inspectors and technicians both as inspection services manager and laboratory manager. As laboratory manager was responsible for hiring and training personnel as well as supervising lower level managers and technician/inspectors.

American Testing Laboratories – 13 years
Salt Lake City, Utah
Job Title(s): Laboratory Manager, Laboratory Foreman, Inspector, Technician
Duties: Performed inspections of reinforced and prestressed concrete, structural masonry, spray-applied fireproofing, and soil. Supervised other inspectors and technicians both as laboratory foreman and laboratory manager. As laboratory manager was responsible for hiring and training personnel as well as supervising technicians and inspectors.

Monroc, Inc – Precast Division – 5 years
Salt Lake City, Utah
Job Title(s): Quality Control Manager, Batch Plant Manager
Duties: Formulated quality control plan leading up to PCI plant certification. Performed required tests and inspections and record keeping on day-to-day basis for precast/prestressed plant operations. Supervised other technicians and inspectors performing similar duties. Supervised concrete batch plant operators and drivers.

Education
1962 High School Diploma, East High School, Salt Lake City, Utah

Desna Bergold

Training Coordinator

Position

2001-Present, Materials Division, Complex
Training Coordinator

- Train and certify technicians in test procedures according to UDOT/TTQP.
- Schedule courses and coordinate facilities.
- Review manuals and presentations.

Experience

1998-2001, Region One Construction, South Weber
Construction Technician IV

- Managed UDOT Construction Project Field Laboratory, ensuring specification for materials testing are met on assigned projects.
- Materials sampling, testing and documentation as per AASHTO, UDOT Standard Specifications, Minimum Sampling and Testing Requirements and Project Supplemental Specifications.
- Trained seasonal employees and other UDOT personnel in testing procedures.
- Taught second year Materials for the UDOT T^3 Program.

1991–1998, Region One Construction, South Weber
Construction Technician III

- Materials sampling, testing and documentation as per AASHTO, UDOT Standard Specifications, Minimum Sampling and Testing Requirements and Project Supplemental Specifications.
- Trained seasonal employees and other UDOT personnel in testing procedures.
- Taught second year Materials for the UDOT T^3 Program.
- Assisted in certifying Region One Technicians in testing procedures.

1987–1991, Region One Construction, South Weber
Construction Technician II

- Materials sampling, testing and documentation as per AASHTO, UDOT Standard Specifications, Minimum Sampling and Testing Requirements and Project Supplemental Specifications.
- Trained seasonal employees and other UDOT personnel in testing procedures.
- Assisted in certifying Region One Technicians in testing procedures.

1985–1987, Region One Construction, South Weber
Construction Technician I

- Materials sampling, testing and documentation as per AASHTO, UDOT Standard Specifications, Minimum Sampling and Testing Requirements and Project Supplemental Specifications.

Certifications

UDOT/TTQP Aggregate AgTT

UDOT/TTQP Asphalt AsTT

UDOT/TTQP Embankment/Density EbTT/DTT

UDOT/TTQP Concrete ACI-CFT

UDOT/TTQP Laboratory LbTT

UDOT/TTQP Superpave Mix Design

UDOT Materials Portable Nuclear Moisture-Density Gauge

Education

1982–1984	Weber State College	Ogden, UT

Method of Technician Training

All Labs and Sections

Staff Training Program for Technicians

All materials technicians will be trained prior to performing test or calibration procedures they have not previously performed. The following training procedures will be followed:

1. The trainee obtains a copy of the applicable test/calibration procedure and report form.

2. The trainee studies the test/calibration procedure and report form and becomes familiar with the equipment, terminology, test/calibration procedure, calculations, and test/calibration reports.

3. A qualified technician demonstrates the test/calibration procedure for the trainee.

4. The trainee performs the test or calibration procedures repeatedly under the guidance of a qualified technician until he/she is proficient.

5. The laboratory supervisor observes the trainee demonstrating the procedure. When the trainee performs the procedure properly, the laboratory supervisor documents that the trainee has the ability to perform the test/calibration procedure and enters the information in the trainee's training record.

6. The laboratory supervisor ensures that each new staff member is trained for the testing/calibration duties assigned and that staff members are retrained when they receive new responsibilities or when test/calibration methods are updated.

7. The laboratory supervisor uses the form entitled 'Technician Training and Evaluation Record' (next page) to track the annual technician and trainee evaluations.

8. Training and evaluation records are kept in the laboratory supervisor's office.

9. The Materials Engineering Manager reviews all records annually. If any discrepancies are found, they are forwarded to the Engineer for Materials for further review and resolution.

Technician Training and Evaluation Record

Date: _____
Technician / Trainee: _____

Test/Calabration Method	Check One: Initial Training	Check One: Yearly Eval.	Evaluated By:	Date	Results / Comments

Additional Comments: _____

_____

_____

_____

_____

Next Evaluation: _____
Evaluator's Signature

Method for Reviewing Technician Competency

All Labs and Sections

Each laboratory supervisor evaluates their technicians' competency at least once every *twelve* months. Each technician is required to demonstrate the AASHTO/ASTM test or calibration procedure for which he/she has been trained to perform.

For each technician, the laboratory supervisor

- records the test/calibration demonstrated
- records the date of the demonstration
- records the results of the evaluation (satisfactory or unsatisfactory)
- signs each entry on the evaluation record

If an unsatisfactory result is recorded for a specific test/calibration, the laboratory supervisor

- reviews all observed deviations from the standard procedure with the technician
- observes the technician re-demonstrating the test/calibration procedure
- records the results as indicated above

Employee Training and Evaluation Records

- The Laboratory Supervisor maintains all training and evaluation records in an office file.
- The Materials Engineering Manager reviews the files annually.
- If any incorrect or incomplete records are found, or if any discrepancies are found, the Materials Engineering Manager forwards the information to the Engineer for Materials for further review and resolution.

Materials Technician Certification Program

The Western Alliance for Quality Transportation Construction (WAQTC), is dedicated to improving the quality of the transportation products and services that we provide. To initiate quality improvement the WAQTC has implemented a **Transportation Technician Qualification Program** (TTQP) and a **Laboratory Qualification Program** (LQP) [1]. The TTQP currently consists of instruction and qualification in field materials testing procedures that are agreed to by WAQTC members in a number of technical areas relating to transportation construction. This program is prescribed to meet, in part, the requirements of The Code of Federal Regulations 637, Subpart B - Quality Assurance Procedures for Construction. It is anticipated that the WAQTC will provide training and Qualification in additional disciplines in the future.

PURPOSE OF THE TTQP AND LQP

The purpose of this qualification program is to provide improved quality in the transportation products that we provide. One means of accomplishing this is by ensuring that individuals have demonstrated abilities to engage in quality control or quality assurance activities in transportation construction work that is under the jurisdiction of contracting agencies that are members of the waqtc, and that laboratories that perform agency work meet an acceptable level of performance. Unless otherwise specified, in the contract documents, all WAQTC members that are contracting agencies will require that technicians who perform agency contract work will have successfully completed the transportation technician qualification program, and laboratories that perform sampling and testing on agency projects will have been qualified by the laboratory qualification program in their respective states.

TTQP OBJECTIVES

- **to provide highly skilled, knowledgeable materials sampling and testing technicians**
- **to promote uniformity and consistency in testing**
- **to provide reciprocity for qualified testing technicians between participating agencies**
- **to create a harmonious working atmosphere between public and private employees based upon trust, open communication, and equality of qualification**

[1] *The TTQP and the LQP are affiliate extensions of the WAQTC. Whenever TTQP or LQP is used in this document, it is assumed that WAQTC precedes the reference in the text.*

Who must be Qualified?

All persons responsible for sampling of materials and performing and reporting on tests, in any of the technical areas in which qualifications are offered, as defined elsewhere, on any project under the jurisdiction of one of the WAQTC contracting agencies must be qualified, unless otherwise designated in the contract documents for that project. Qualification may be granted only after successfully completing the requirements of this program. "Grand fathering" or "exceptions" to the TTQP, other than as noted in the concrete qualification will not be granted.

Qualification Reciprocity

Technicians must successfully complete all requirements of a Qualification area to be considered Qualified by the TTQP in that area. A person completing these requirements, and holding a valid Qualification, will then be considered Qualified to perform those specific sampling and testing functions, only, falling under that Qualification in any participating Agency of the WAQTC. Although the technician is considered Qualified in that area by all Agencies for the defined test methods, there may be additional Agency specific tests and contract administration or quality assurance procedures, not specifically covered in the TTQP Qualification, that the technician will be required by that Agency to show proficiency in. The technician should be aware that, non-WAQTC Agencies may or may not accept any of these Qualifications. Each individual should verify specific Agency requirements prior to seeking employment.

If an Agency does not require a technician to successfully complete the examination requirements for all test methods contained under a Qualification module, as defined in this manual, that person will not be considered Qualified under the TTQP in that module. A technician must successfully complete the additional exam requirements prior to obtaining WAQTC-wide Qualification. Any Qualification obtained in this manner will expire, on the last day of the month in which the initial exam portion was successfully completed, three (3) years after that initial exam.

Certification Courses

- Aggregate Testing Technician (AgTT)
- Asphalt Testing Technician (AsTT)
- Concrete Testing Technician (CTT)
- Embankment and Base/Density Testing Technician (EBTT/DTT)
- UDOT Laboratory Testing Technician (LbTT)
- UDOT Sampling and Density Testing Technician (SDTT)
- Superpave Mix Design